THE

Brush

BRUSH

LECTRIC LIGHT

AND

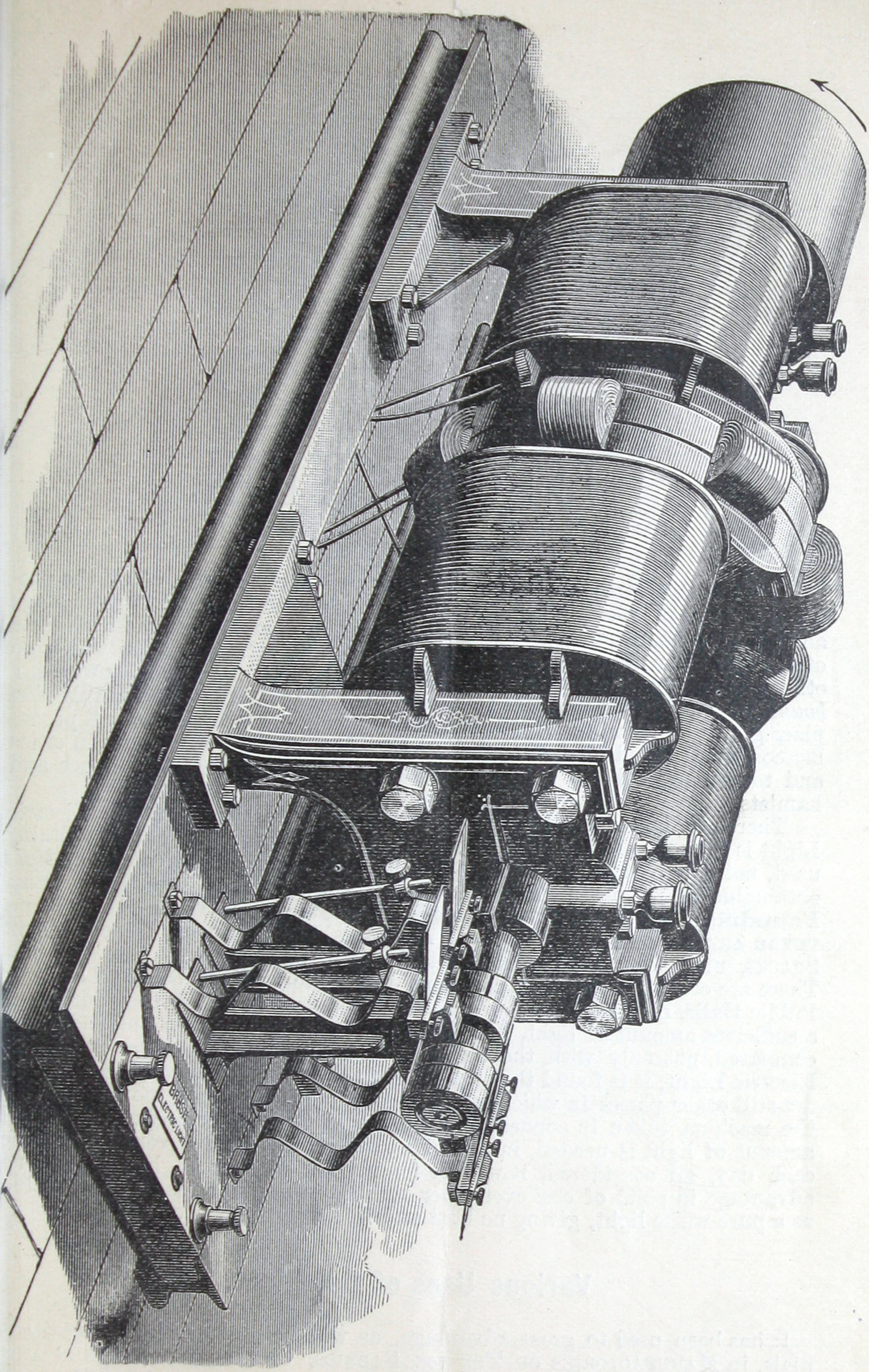
ELECTRO-PLATING

APPARATUS.

THE BRUSH ELECTRIC COMPANY,

CLEVELAND, O., U. S. A.,

SOLE MANUFACTURERS.



THE BRUSH DYNAMO-ELECTRIC MACHINE.

SIZE NO. 8.

DIMENSIONS, 89 inches long, 28 inches wide, 36 inches high.—WEIGHT, 4,800 lbs.
PULLEY, 20 inches diameter, 12 inches face.—BELT, 12 inches.
SPEED, 675 to 700 revolutions per minute.
This Machine gives 40 lights of 2000 C. P. each in one circuit and requires 36 H. P.

INTRODUCTION.

THE BRUSH SYSTEM OF ELECTRIC LIGHTING is the only one, of all the proposed systems of Electric Lighting, which has passed the experimental stage and clearly demonstrated its right to a secure place among the practical lights of the day. An immense field is opening before electric light, in which no other known illuminator is so "well fitted to shine." It is not, however, a *boundless* field. It is no more to be expected that it will ever entirely displace gas or oil, than that locomotives will displace horses. Gas will probably continue to hold its own as the light for domestic and small uses in cities and towns, and oil will keep the field in similar situations in villages and hamlets.

There are, however, an immense number of situations in which Electric Light is the only artificial illuminant that can be economically and profitably used, not only because it costs less, but because it furnishes a *volume of light* obtainable in no other way. Such situations are **Rolling Mills, Iron Foundries, Moulding Shops and all Factories, Mines, etc., where** THERE ARE LARGE ROOMS; AS WELL AS DOCKS, WAREHOUSES, DEPOTS, OPEN SPACES, ETC. In such places Electric Light is being very largely used. There are other Factories, Mills, Shops, Large Stores, Hotel Offices, Theatres, Public Halls, etc., in which gas or oil has been used and they have furnished a sufficient amount of light, but, when the cost is counted up and the result compared, not only with the cost but with the other great advantages of Electric Light, it is found that the latter has the decided advantage. There are still other places in which when the cost of the necessary power to drive the machine, taken in connection with the fact that a comparatively small amount of light is needed, in a number of rooms, or for a very short time each day, are considered, it will be found that Electric Light possesses no advantage in point of *cost* over other lights, yet still retains its great value as a pure white light, giving no heat and free from danger of explosion.

Various Uses of Our Light.

It has been used to great advantage, as will be observed by the testimonials, in MANUFACTORIES OF TEXTILE FABRICS, COTTON, WOOL, LIMEN AND SILK OF EVERY DESCRIPTION; IN IRON MILLS; MACHINE SHOPS; ROLLING MILLS; PETROLEUM REFINERIES; PAPER MILLS; DRY GOODS AND CLOTHING STORES; PARKS; DOCKS; OPEN SPACES; DEPOTS; PRINTING ESTABLISHMENTS; COLLEGES; HOTEL OFFICES AND DINING ROOMS; MATCH FACTORIES; CIRCUS TENTS; MINES; SMELTING WORKS; OCEAN AND RIVER STEAMERS, etc., etc.

PROGRESS OF ELECTRIC LIGHT.

In the year 1832 Faraday, the illustrious English philosopher and scientist, announced that he had discovered what has since been called magnetic induction, or the induction of a curreut of electricity in a coil of wire brought near a permanent magnet and the phenomena attendant thereupon. The announcement created great interest in the scientific world, and almost immediately instruments and machines were made by electricians and others to test and utilize the newly discovered facts and laws. Among these early and very crude machines may be named those of Clarke, Nollet, Holmes, Wilde, Ladd, and others. These were all imperfect machines, aud it was not until quite recently that very material progress was made in perfecting apparatus that should fairly represent the value of Faraday's discovery.

The Gramme (French) and Siemens (Anglo-German) are types of machines much more successful than any of their predecessors; but when Mr. Brush entered the field with his machine in 1876—after forty-four years of experience and research by others—there was no machine known, either here or abroad, that was in any respect a practical or commercial success. No machine was then known that would furnish a current for a number of lamps and permit of their being burned in one circuit, with steadiness aud uniformity. Very soon after Mr. Brush entered the field, he presented to the public an apparatus which was entirely clear from the defects of all other systems, and, as the public were waiting for just such an apparatus, they welcomed the new comer, and the result is that to-day the

BRUSH ELECTRIC LIGHT,

is practically the sole occupant of the field; for at least forty-nine out of every fifty lights that have been sold in this country are BRUSH LIGHTS. At this date, February, 1881, 5000 Brush lights have been sold for regular industrial use, and the business has only just opened. An idea of the great superiority of the Brush system of lighting may be obtained from the fact that with the largest sized Brush machine *forty powerful electric lights are burned* IN ONE CIRCUIT, *with an absorption in the machine of thirty-six horse power.* No other system of lighting can offer even *one-fifth* of this number of lights on one circuit; and most are confined to a *single light from one machine.*

This vast advantage of the Brush system is due wholly to the valuable new features in Mr. Brush's apparatus; in which it differs from all other systems. The reader is referred for all these details, and for a full and com-

plete description of the apparatus, to the monograph from the pen of Mr. Brush, which is published in the closing pages.

The Most Convincing Evidence of the value and practical character of the Brush system may, however, be gained from a perusal of the numerous letters from prominent users of the light that are published herewith. In very few of the cases of the first large users of the light were all the lights purchased in the outset, but by degrees, as the value and practical character of the light were developed by actual demonstration.

The Riverside Mills of Providence, for instance, bought first one, and then a second, and then a third, of our largest sized machines; and, upon the completion of an addition to their already very large establishment, *two more*, so that now they have five machines and ninety-six lamps in all in use. They say that it is the safest pleasantest, most available and *by far* the cheapest light they can obtain from *any known source.*

The successful use of our light, as indicated by these letters and by the experience of all who are using it, proves that it possesses the following very great advantages over any other known method of illumination:

First. It is a Safe Light; there being no dangers in its use at all corresponding to those incurred by the use of oil or gas —such as explosions, leakages, risk from lighted matches, flaring burners, etc. The letter from Hon. Edward Atkinson, of Boston, the first authority in New England on fire insurance, is final and most convincing evidence on this point.

Second. It is a Pleasant Light; being pure in color, steady and clear. No other artificial light of any power is as steady as the Brush light. Flickering is practically obviated in the present apparatus.

Third. It is a Healthy Light; for it does not vitiate the atmosphere and give off such quantities of heat and noxious gases as do other illuminators, notably gas. Upon this point several of the letters are specific The air in a room where electric light is exclusively used remains pure, cool and healthful, and in all our experience No EYES have been injured by it, much as has been said about its brilliancy and power.

Fourth, It is a White Light; and therefore the only light available for use at night, where colors are to be observed or matched, a point of importance in many cases. Colors observed by our light are just the same as by daylight. In factories where colored goods are made, and in stores where they are sold, it is the only light that is effective.

Fifth. It is the Cheapest Light in ALL places where considerable light is needed, and where power to drive the machines can be obtained or furnished. The evidence in the testimonials we publish is unmistakably clear and convincing on this point, and we do not therefore necd to discuss it.

A point of very great advantage, which will be appreciated by *superintendents and foremen of large manufacturing establishments*, is, that electric light, when properly used, illuminates *all parts* of a shop or factory. In entering a room lighted in the old way, with gas or oil, it will be at once noticed that in order to get any satisfaction at all from the use of such a light, it must be located very near the workmen, leaving the spaces between the workmen and the open spaces in the room, in comparative gloom, If a workman in a shop lighted in this way desires to find a tool, or implement, or a portion of his work, which does not happen to be located near a light, or in its accustomed place, he must go poking about in comparative darkness to hunt for it, and is thus materially delayed in his work. He can also, if so inclined, waste time, unobserved by the superintendent, in portions of the shop not well lighted. Every foreman of a shop will recall numerous instances in which he has, by his unexpected appearance in such parts of the premises, discovered this neglect of duty, or "soldiering" as it is so often called. Displace the old light by the new, and note the result. All is now changed.

Every part of the shop is now *light.* The foreman can stand at any point which commands a view of the men and can instantly see what they are doing, and he has them as fully under his observation as by day. Now a hunt for tools, or implements, or parts of work, is a short one, for there is *light everywhere.* In all factories where our light is used this is one of the first points of improvement noticed, and the result is that night work in such shops and factories, instead of falling behind day work, both in quality and quantity, is kept up to the standard.

The Whiteness and Purity of Electric Light constitute great points in its favor, in all factories where colored goods are made or in large stores where they are sold. It is impossible to match the thousand and one delicate shades, which are now given to colored goods, by a light which is *yellow* in color, as is the fact with gas and oil. With our light the most finely shaded tints and colors are as readily detected as by daylight. In the many **Dye Houses** where our light is used it has proved to be absolutely indispensable, where it is desired to carry the work forward into the late afternoon or early evening, or *all night*, as is often the case.

The experience of the Riverside Mills of Providence, the Atlantic Mills of the same place, the Willimantic Linen Co., the Oswego Falls Woollen Mills, Thos. Dolan & Co., and the Messrs. Cheney Bros. Silk Factory not to speak of many others, strongly confirm this statement.

In the large number of factories and mills where our light has been adopted, it is found that all operations which had hitherto been restricted to the daylight hours may now be carried on by means of Electric Light, with the most complete satisfaction.

The Safe Character of Electric Light is universally admitted. The letter of the Hon. Edward Atkinson upon this point, referred to above, is of the most gratifying character. The accidental fires which so often occur in factories and mills, and which so frequently are traced to the careless use of matches, to explosions of oil lamps, to leaks from defective gas pipes, to flaring and wind-blown gas flames, and to similar causes, may be expected to disappear at the approach of Electric Light, with its harmless copper wires, conveying currents of electricity to the non-explosive, and almost non-combustible carbon points. These are covered in exposed positions by the glass globe, which may, if desired, be air tight, and thus positively prevent explosive gases or combustible materials from without, from coming into contact with the incandescent carbon points, incapable of communicating fire to any thing not absolutely *in contact* with their heated surfaces. The naked hand may be held within an *inch* of the spot from which the immense light, produced by one of our lamps, is emanating, without any danger of burning it. It radiates far less *heat* than an ordinary gas burner, while giving light equal to *an hundred* gas burners. This peculiarity of the light is commented on in the testimonials from the Riverside Mills, Willimantic Linen Co., Oswego Falls Manufacturing Co., and others, and is of very great importance, especially in factories where many employes are engaged.

The Cheapness of Electric Light in all locations adapted to its use is now generally admitted. We will call attention to several cases. The Riverside Worsted Mills, of Providence, R. I., formerly used in their mill-rooms 578 six-foot gas burners. These gas burners did not give the desired amount or kind of light, and yet their cost was *enormous*, for, as is well known, this establishment runs night and day the year round, and consequently they would use artificial light at least 3000 hours per year. The 578 gas burners consumed 3468 cubic feet of gas per hour, or 10,404,000 cubic feet per year, which, at a cost of $2 per thousand cubic feet, amounted to an expenditure of $20,808.00 *per annum.*

Desiring to get more and better light, at a less cost, this mill adopted the Brush Electric Light and have displaced the 578 six-foot gas burners with 71 of our lights, (25 other lamps are located where gas was not used before.)

Each of these lights is equal in diffused lighting power to *fifty* gas burners; so that the great increase of light may be inferred. In a letter addressed to us, dated January 1st, 1880, the following items are given as constituting the *total cost* of the 71 Electric Lights:

Carbons consumed per hour	$ 89
Power used for machines, per hour	65
Interest on investment in plant, per hour	30
Attendance, oil, waste, wear and tear etc., per hour	36
Total	$2 20

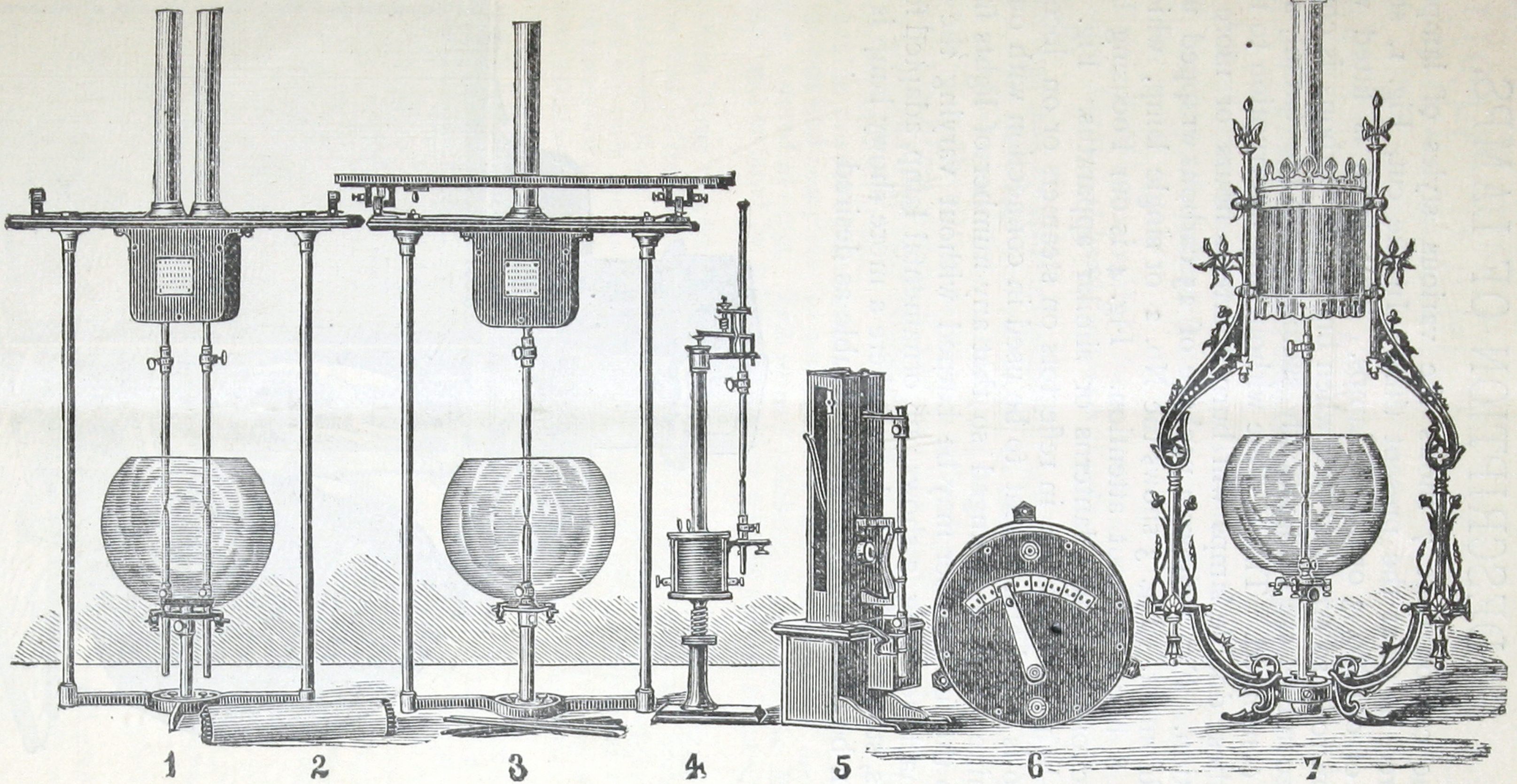
This amounts in the 3000 hours per year that the lights are used to the sum of $6,600 showing the **Enormous Saving of $14,190 per Year Over the Cost of Gas.**

Besides this great economy in first cost, fully five times as much light is obtained from the 71 electric lights as could be given by the 578 gas burners; not to speak of the other great advantages that are mentioned in the testimonials from this establishment. At the Oswego Falls Manufacturing Company the economy is still greater, for here water power, unlimited in amount, is available, and it costs hardly anything but the investment in the water wheel and its connections. It is safe to state that the 90 Brush lights in use in this mill could not be replaced, so as to produce as satisfactory a light, by 2000 six-foot gas burners of sixteen candle power each, and this amount of gas would cost not less than TEN TIMES as much per hour as the total cost per hour of the 90 Electric Lights.

The Steadiness of the Brush Light is frequently commented upon. A gentleman in New York city recently desired to investigate the subject of electric light, and, without our knowledge, wrote to *all* of the more prominent users of the Brush light to obtain their opinions of it. We afterwards heard of his having written, and wrote to him upon the subject. He said in reply:

"I needed information about the practical every day workings of the light, and have accordingly written to the principal concerns whose names are mentioned in your circular and have the replies of all of them. You would have good reason to be satisfied with the replies in regard to your light. *Every one* of them is favorable and friendly. In no case does flickering seem to give them any trouble, and I should judge from what is said that your light is so steady that no one thinks of the flickering at all. The reports on all other points are favorable."

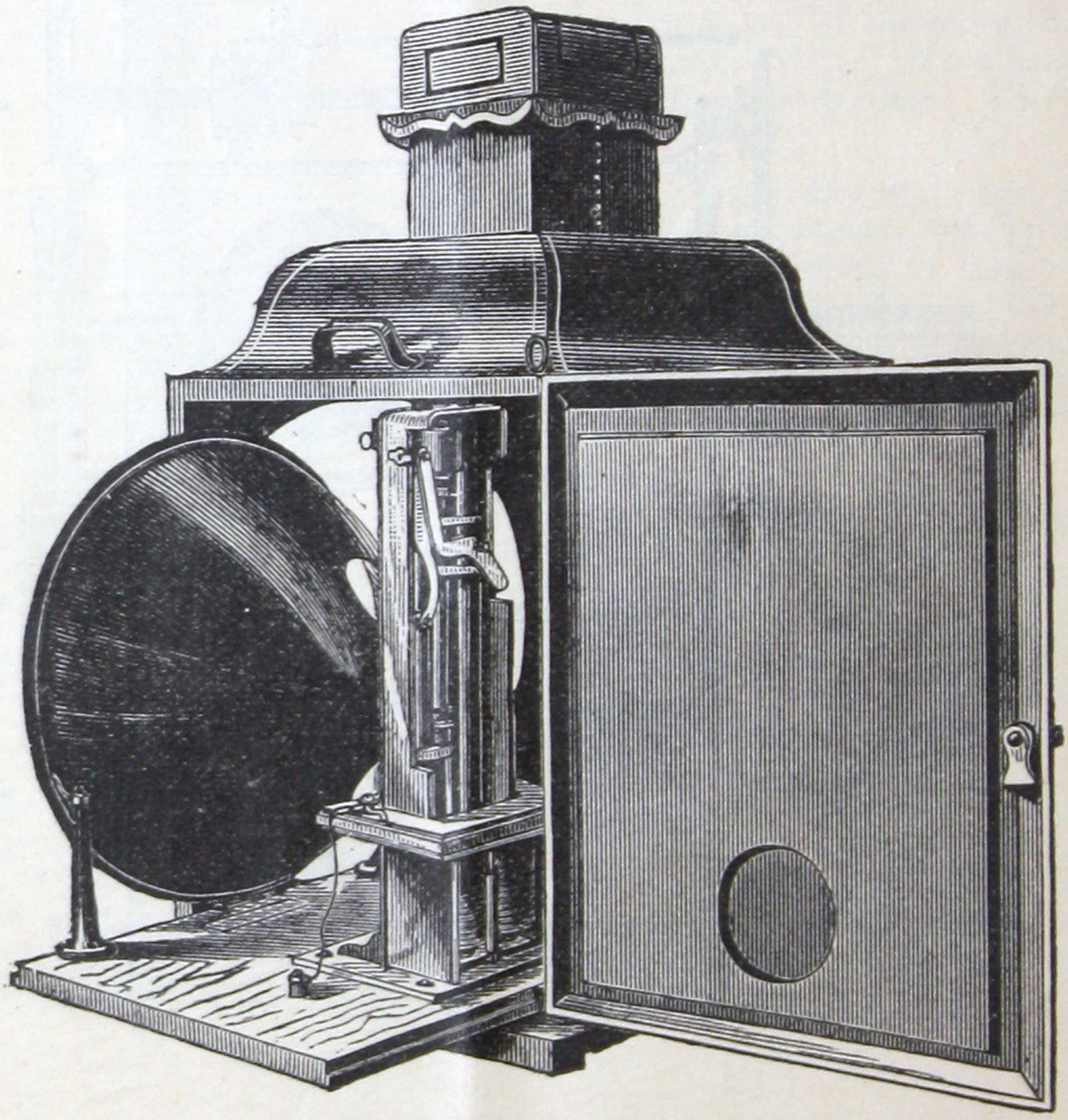
The Simplicity and Durability of the Brush Electric Lighting apparatus are apparent upon inspection and clearly evident from the experience of users. Two per cent. is an ample allowance for wear and tear upon machine and lamps, and with this amount, or even less, annually spent upon them, there is no good reason why they should not last fifty years or more. In the machine the only chances for any wear are in the journal bearings and at the commutator. Such great care is exercised in providing the most perfect babbitt-metal bearing surfaces in the journals, and smoothness and accuracy of working, and freedom from sparks at the commutator, that wear is reduced to a minimum. There are numbers of Brush machines that have been in constant use for many months that do not show any perceptible wear and that are in all respects fully as good as new. This is the uniform result, except where carelessness or indifference on the part of attendants permit unnecessary wear by the neglect of oiling or cleaning.



1 2 3 4 5 6 7

DESCRIPTION OF LAMPS.

The cut on page 7 shows the various styles of lamps manufactured by us at the present time. In the cut, Fig. 1, shows the form of our No. 3 or double lamps. This lamp is fitted with two carbon rods, so arranged that when one set of carbons is consumed, the second set are automatically switched into the circuit, and burn until consumed. This is done without any interruption to the light, and these double lamps will burn fourteen hours or more without attention. Fig. 2 shows a package of 25 carbons wrapped up ready for shipment. Fig. 3 shows the No. 2 or single lamp, which burns 7 to 8 hours without attention. Fig. 4 is our Focusing lamp, for projections in magic lanterns or similar apparatus. Fig. 5 is our head-light lamp for use in reflectors on steamers or on locomotives. Fig. 6 is a dial attachment to be used in connection with our largest machines, and is arranged so that any number of lights from one up to the full number may be burned without varying the speed of the machine. Fig. 7 shows our ornamental lamp, adapted for use in hotels, stores and other places, where a more showy lamp is needed. It can be made either single or double as desired.



HEADLIGHT LAMP.

With parabolic reflector and case complete for use on steamers and locomotives.

THE BRUSH ELECTRIC LIGHT.

WHAT THOSE WHO ARE USING IT SAY OF IT.

From the Riverside Worsted Mills.

RIVERSIDE WORSTED MILLS, PROVIDENCE, R. I., Dec. 1, 1879.

Mr. G. W. Stockley, Vice President, Telegraph Supply Company, Cleveland Ohio.

DEAR SIR: Your letter asking for a sketch of our experience with the Brush Electric Light is at hand, and we willingly give you such information as you desire.

We had been making some investigations into the electric lighting in use in France: when our attention was called to the American systems on exhibition at the Mechanics' Fair in Boston in the autumn of 1878. After as careful attention to the matter as its then undeveloped state admitted of, we decided that the Brush system, if any, was the light best adapted to our wants, and arranged with your Boston Agent to set up one of your largest machines in our mill on trial.

The machine was set up and started about the 20th of February; its success was instant and complete; so much so that this machine was accepted and another ordered at once. This second machine was started in March, when a third was ordered by telegraph, which was set up and running early in April.

With these three machines we ran through the summer, getting such satisfaction that in September we ordered two more, which are both now running, making in all five of your largest machines running eighty (80) lamps which are now regularly lighting nearly all of our principal rooms. After this experience of nearly a year we have not a word to give you save of praise. Our satisfaction increases as we come to know the machines more thoroughly.

They could not have a severer test than we give them, as our mill runs night and day the year through, and we have not had a moment's delay from, or a dollar's worth of repairs on, any of the machines or lamps. The light is all we expected; it is strong and steady, clear and white; it is universally liked by both overseers and help; so much so that we doubt if we could get along now with the help if we were to return to the old gas lighting; certainly we should not get so good work, nor so much of it. We use porcelain globes pretty generally throughout the mill, and we have less complaint of trouble to the eyes than we used to have with gas.

The air of the rooms, too, shows a very marked difference. In our Weave-Room, with its two hundred and fifty (250) gas lights, the air became almost unbearable after midnight in the summer; and the jaded appearance of the men showed how they felt it.

With the electric light there is no such trouble, as the air is as good as in the daytime, and noticeably cooler.

An answer to your question as to how many gas burners would give us as much light as we are getting now, will hardly give a fair test, as we should never think of trying to get so much light with gas.

In our Weave-Room, for instance, we formerly had two burners to each loom close down to the work; now the *whole room* to the peak of the roof and in the furthest corners is almost as light as day; still the figures are interesting.

We had formerly about two hundred and fifty gas burners of seventeen candle power each, a total of 4,250 candle power. We now have twenty electric lamps of two thousand candle power each, a total of forty thousand candle power.

Your other question, "How many gas burners would answer your purpose?" is more satisfactorily answered. Owing to some changes preparatory to setting up new machinery, all our eighty (80) lamps are not at this moment in full service, but by actual count we have seventy-one (71) lamps permanently placed, and these displace five hundred and seventy-eight (578) gas burners; that is, there are five hundred and seventy-eight burners already placed that would be lighted were the electric lights stopped.

Estimating these burners at six feet per hour, we should use 3,468 cubic feet of gas per hour, costing, at $2 per thousand cubic feet, **$6.93 per hour.**

The actual cost of the electric light is as follows:

Consumption of carbons per hour	$ .89
Power used for machines	.65
Interest on cost of machines, say $15,000	.30
Attendance, oil, wear and tear, etc	.36
Total cost per hour	$2.20

Making a saving of four dollars and seventy-three cents ($4.73) per hour, and this saving for the three thousand (3,000) hours the machines run in the year, is $14,190, and nearly pays for the machines. These figures are *actual*, as we averaged the number of carbons burned for several nights to get the exact consumption of each lamp, and for the consumption of gas we took off a number of the gas burners in use, had them tested on a test meter and averaged them, getting a strong six (6) feet to each burner.

Respectfully,

RIVERSIDE WORSTED MILLS.

—:o:—

From the Oswego Falls Manf'g Co.

OSWEGO FALLS, N. Y., Dec. 5, 1879.

The Brush Electric Light Co., Boston, Mass.:—

GENTLEMEN.—In reply to your inquiry I have pleasure in saying we are well pleased with the four No. 7 machines which supply 78 globe lights you fitted up for us. The result realizes our sanguine expectations.

The cost of generating the light is *very small*, especially where water power is available. The great merit however, of the light, is its not vitiating the quality of the atmosphere, which after a room has been lighted for several hours remains cool and pure and therefore is more healthy than any artificial light with which I am acquainted. Yours respectfully,

D. RAMSDEN, Supt.

Mr. Ramsden has since ordered another machine and now has ninety lights in regular use. The gas pipes have been removed from the mill.

—:o:—

From Cheney Brothers, South Manchester, Ct.

SOUTH MANCHESTER, CONN., Dec. 3, 1879.

The Brush Eleetric Light Co.. Boston, Mass.:—

GENTLEMEN.—In response tc your enquiries we would say that the experimental eighteen light machine that you put in at our works promises to be a success. We are experimenting with the machine in different departments of cur works in order to fully test its capacity and the cost of lighting our mills as compared with gas. So far the results are favorable, and we think farther trials will demonstrate the value and economy of your light.

Yours truly, CHENEY BROTHERS.

From the Willimantic Linen Co.

TREASURER'S OFFICE, HARTFORD, CONN., July 5th, 1879.

Brush Electric Light Co., Boston:—

GENTLEMEN.—The six-light electric machine which we put in our Willimantic Mill is running to our entire satisfaction. We have two lights in our winding-room, 68 by 80 feet, and four in the mule room, 68 by 200 feet, where we are spinning No. 140 cotton. The entire cost is about equivalent to gas at $1 per thousand feet—the light FAR BETTER. Gas costs us $3.25 per 1,000 feet. I enclose a photograph taken in the winding room after midnight, which gives a very good idea of the power of the light.

In this room the electric light is particularly of value, as colors can be determined as well as by daylight. The light does not raise the temperature. All gas gives out non-respirable gases and consumes oxygen. At the end of the day, when work-people are well tired out, the effect of gas by raising temperature and giving out noxious gases, on the workers, is quite plain (to say nothing of the bad effect on the work). This is particularly noticeable in rooms where there are a good many work-people and a large number of gas-burners. The gas raises the temperature in our winding room 13 deg., the electric light *not at all*, as shown by a common thermometer. You will see that this evenness of temperature is very important in the spinning of fine cotton yarns. Yours truly,

W. E. BARROWS, Treas'r.

——:o:——

TREASURER'S OFFICE WILLIMANTIC LINEN COMPANY,
April 9, 1880.

MR FREDERICK FOSDICK,
Treasurer Fitchburg Steam Engine Company,
Fitchburg, Mass.:

DEAR SIR—Your favor of April 6th to hand. As to our experience with the Electric Light I would say: The first machine, known as the Brush Electric Machine, was purchased February 1st, 1879 and has been used since.

This was a six-light machine. Since that time, January 1st, 1880, we have purchased two machines, one of 18 lights and one of 1 light. The larger of the two is used at our Willimantic Mills, in the twisting room and mule spinning room, where we are spinning No. 120. This machine and its 18 lamps furnish light in place of about 450 five feet gas burners. At lighting up time, with gas, the temperature of the room is raised about 12 degrees Fahrenheit; with the Electric Light there is no change that can be measured. All our work people prefer the electric light to gas. In our color room all shades of color can be determined at night as well as in day time. At our spool shop, in the birch woods of Maine, we use one light in the saw mill, 40x60 feet, and run all night. The night gang do as much work as the day gang, and of as good quality. I think it is safe to say with oil lights this would not be done. This light was started January 1st. The man in charge never saw an electric light or generator till he saw this one. Our man at Willimantic went up to the works, explained the working of the light, and set it up and returned the next day. It has not been out of order or given the least trouble up to this time, and we do not expect any in the future, a fair illustration of its simplicity. In our new mill, 820x172 feet, we expect to use the Brush Electric Light exclusively. We are now trying the experiment of running one of our mills all night, so far with good results, using the Electric Light.

I should be glad to have you visit our factory, when you can see for yourself just how the thing works.

Certainly it is a very good thing for the health of the work people.

Very truly yours,

W. E. BARROWS, *Treasurer*.

From Atlantic Mills, Providence, R. I.

ATLANTIC MILLS, PROVIDENCE R. I., NOV. 11, 1879.

Brush Electric Light Co., Boston, Mass:—

GENTLEMEN:—In reply to your enquiry as to the result obtained by us in the use of your Electric Light, we would say that it has given us good satisfaction. For manufacturing purposes we find it *far* superior to any other light and are confident it is *much* more economical than *any* kind of gas. The machines and lamps require but very little attention, and need only a man of average intelligence to use them successfully. We expect in the *near* future to light our entire Works by the use of your machines.

Very truly yours, OWENS BROS., Agents.

In July, 1880, 80 more lights were ordered by this establishment, making 11 all, thus giving the best possible evidence of the success of the light.

——:o:——

CHENEY BROS. SILK WORKS.

SOUTH MANCHESTER, CONN., June 23, 1880.

Brush Electric Light ompany, Boston, Mass.

GENTLEMEN:—Your favor of the 15th was laid aside for the writer to answer, and in the pressure of other things has been overlooked, which will account for your not receiving a more prompt reply. In regard to your enquiry about our Dye House: length, width, height, etc., and the number of the Brush Lights used, etc., we reply as follows: One dye house 150 feet long, 40 feet wide, and 15 feet high. In this dye house wehave four lamps, which gives us all the light we require. Our smaller dye house, connected with the room described, by a passage way, is the same height, and 88 feet long; in this we have two lamps, making six in all. We are very much pleased with the results of this light, in the Dye House, particularly in the winter; when, although we often have a dense fog caused by the steam arising from the dye tubs, we are enabled to work as well, in fact much better by night than during the day time, matching colors as well as by day light.

Yours truly,

CHENEY BROS.

JOS. W. CHENEY.

——:o:——

How it Affects Insurance.

From Boston M'f'rs Mutual Fire Ins. Co.

BOSTON MANF'S MUTUAL FIRE INS. Co.
BOSTON, MASS., NOV. 21, 1879.

G. W. Stockly, Esq., V. P., Telegraph Supply Co.:—

DEAR SIR:—You are at liberty to say that this Company prefers the Electric Light (so guarded that points of incandescent carbon cannot fall from it) to any other known mode of lighting, having as yet been unable to find any cause of danger in its use, except as above stated.

Yours very truly, EDWARD ATKINSON, President.

It is well known that Hon. Edward Atkinson is the highest authority on Mill Insurance and Mill matters generally and we attach great value to his endorsement of our light.

How it Succeeds in Stores.

From New York Dry Goods Houses.

345-347 BROADWAY, NEW YORK, May 5, 1880.

THE BRUSH ELECTRIC LIGHT COMPANY,
338 *Broadway, City:*

GENTLEMEN—At your request, we are pleased to state that your Company have just put in our store one of your large 20-light electric machines, and have just got the lights properly adjusted. So far, we are very highly pleased with the result. We find the light to be very brilliant, clear, steady, and much softer and more pleasant for the eye than we anticipated. We believe it will be a great saving in expense, and far more cheerful than gas, and does away almost entirely with the heat that usually fills a close room from gas jets. We believe it has special adaptations and advantages for the sale of dry goods, as the most delicate tints and shades can be selected by the electric light quite as well, or even better, than by ordinary daylight, and we most cheerfully commend its use in all ordinary business in preference to gas. BATES, REED & COOLEY.

---

66 and 68 WORTH STREET, NEW YORK, May 5, 1880.

THE BRUSH ELECTRIC LIGHT COMPANY,
338 *Broadway:*

GENTLEMEN—Replying to your inquiry, as to the results of our experience with the Brush Electric Light, we would say that it has given us great satisfaction in our factories and our store in this city. We esteem it far superior to any other artificial light now in use. It is much more effective than gas, as colors can be selected by the light equally as well as they can be by daylight, which in dry goods is very important. The saving in factories has been great, not only in the fact that it is far cheaper than gas, but also for the reason that less imperfect goods are made. Truly yours,

A. D. JUILLIARD & CO.

---

345 BROADWAY, NEW YORK, May 5, 1880.

THE BRUSH ELECTRIC LIGHT COMPANY,
C. M. Rowley, General Manager:

DEAR SIR—We have been using for the past three months two of your 18-light machines with much satisfaction both to ourselves and our customers. The parts of our store that were undesirable before on account of darkness, are by the use of the light rendered suitable for our business.

Since the introduction of the light we are enabled on dark days, or even at night, to exhibit any and all kinds of colors of goods as satisfactorily as in clear sunlight. The apparatus requires but little attention, and we are well satisfied with its beautiful light. Yours truly,

DUNHAM, BUCKLEY & COMPANY.

BLACK DIAMOND STEEL WORKS.

PARK, BROTHER & CO., PITTSBURGH, July 9, 1880.

Telegraph Supply Company, Cleveland, O.:

GENTLEMEN:—I received the copy of the Cleveland Herald containing account of the satisfaction given by the Brush Light at Portsmouth Dockyard, England, as per statement taken from *London Times.* I am glad to learn of the success of the Light wherever used. At our works all is going on nicely, and the same set of workmen, who believed and declared they could not get along without gas light, are thoroughly converted. A few times the engine driving your machines had to be stopped a minute or two, and the gas turned on, when the men declared they could not do their work at all with gas light, and when the Electric Light is turned on hail its appearance with shouts. Wishing you full and entire success in the future, and hoping you have altogether recovered from the fire, I am truly yours,

JAMES PARK, JR.

——:o:——

From Bay State Iron Co.

OFFICE BAY STATE IRON CO.,
2 PEMBERTON SQUARE, BOSTON.

Brush Electric Light Co., 5 Pemberton Square, Boston:—

GENTLEMEN:—In answer to your enquiries as to the operation of the **Brush** Electric Light Machine at our Works in South Boston, we would say: We purchased the largest sized machine, No. 7, for eighteen lights, with single lamps; but are using at present but eight of them, constantly, which number we expect to increase at an early day. We have substituted double for single lamps, by which we get a light burning sixteen hours without change.

We use the light in all parts of our Works and have also employed it while unloading coal at night at our wharves. For all purposes and in all places where we have needed it the light has answered our expectations for economy in the power required and in the cost of production, and we consider it has special adaptations and advantages for use in all departments of the iron industry. Truly yours,

J. AVERY RICHARDS, Treasurer.

——:o:——

From the Phœnix Iron Works.

PHŒNIXVILLE, PA., July 10th, 1879.

Telegraph Supply Co., Cleveland:—

GENTLEMEN.—We light our machine shop 317x90 feet, 38 feet high; and our column shop 130x53 feet, 13 feet high, with 11 Brush Electric Lights. In these shops are about 100 machines consisting of lathes, planers, drill-presses, boring mills, punches and steam riveters. We formerly used reflector lamps and small hand lamps, costing about $11.25 per night of 12 hours. Counting power, attendance and carbons, the cost of the electric light is about $4.00 per night, The lights have given us satisfaction, and we consider them much better and cheaper than anything we have hitherto had, and superior to any other we know of. Yours truly,

PHŒNIX IRON CO.

OTIS IRON & STEEL COMPANY.

CLEVELAND, O., July 1st, 1880

Geo. W. Stockly, Esq.:—

MY DEAR SIR:—In regard to the Brush Electric Light, which we have had in use at our works for several months, I would say that we are more than satisfied with it. We have no trouble with it either in running or taking care of it, in fact it goes like an eight day clock. I consider it the only system by which large spaces like Rolling Mills or Steel Works can be satisfactorily lighted. In the winter our men claim they can see by it better in night than by natural light by day, but for this I would not vouch.

Yours truly,

S. T. WELLMAN, Supt.

——:o:——

From Norway Iron Co.

NORWAY IRON WORKS, BOSTON, January 20, 1880.

NAYLOR & CO.

Brush Electric Light Co., Boston.

GENTLEMEN: The number 7 machine for eighteen double lamps which you furnished us, works to our entire satisfaction, giving us all the light we required at the various parts of our mill which we wished to illuminate.

Truly yours,

NAYLOR & Co.

From Pottstown Iron Co.

POTTSTOWN, PA., December 17, 1879.

Telegraph Supply Co., Cleveland, Ohio.

GENTLEMEN: Replying to your favor of the 10th inst., would say that we are using the Brush Electric Light in our plate iron works, nail manufactory and shops, very successfully. Our primary object in introducing the light in our works was to enable us to run our nail factory double turn, as the large and increasing demand for our special brand made it necessary for us to enlarge our production. The work of nailing requires a good strong light; the operating of a nail factory at night being a new departure for that branch of the iron trade; but with the aid of the electric light the main difficulties have been overcome, and we were so much pleased with its service that we introduced it also into our mills and shops, believing that it would add to the comfort of our men as well as increase their utility, although the same degree of light required for our factory work is not necessary for general mill operation. We have a large trade in plates for locomotive and tubular boiler purposes, as we make a specialty in the higher grades, as well also for ship plates, of which we furnished largely for the American line of steamers. The adoption of the light in this last named department has fully met our expectations, and enables us to take further steps for the increase of our product there, which the enlarged call for our plates now necessitates. Yours respectfully,

WILLIAM H. MORRIS,

Treasurer Pottstown Iron Co.

THE GRAND PACIFIC HOTEL, CHICAGO.

JNO. B. DRAKE & CO. PROPRIETORS, CHICAGO, July 10, 1880.

Brush Electric Company, Cleveland, O.:

Gentlemen:—We are using in our Hotel one of your largest sized machines for the illumination of the following rooms:

Three Electric Lights in Office, displacing 136 gas jets; Two in Exchange, displacing 96 gas jets; Four in Dining Room, displacing 110 gas jets; Four in Corridors, displacing 76 gas jets; Two in Ladies Ordinary, displacing 88 gas jets; Two in Parlors, displacing 64 gas jets. 570 gas jets in all, displaced by 17 Electric Lights. Our use of the Light has developed the fact, that it is a perfectly practical and exceedingly economical method of lighting these parts of our house, and we estimate that by the use of these seventeen Electric Lights we save not less than $300 per month over what the gas cost us. We heartily recommend your Light for the use of hotels and similar establishments.

Yours truly,

JNO. B. DRAKE & CO.

——:o:——

From Senator Wm. Sharon, Owner of Palace Hotel.

SAN FRANCISCO, April 24, 1879.

Teleyraph Supply Co., S. F.:—

GENTLEMEN—I have been using ten electric lights at the Palace Hotel, furnished from one No, 4 and one No. 5 Brush machine, using about ten horse-power. The lights are placed as follows: Two 3,000 candle lamps in the Court, displacing 510 gas jets; two 1,000 and one 3,000 candle lamps in the grand dining room, displacing 280 gas jets; one 1,000 candle lamp in the restaurant, displacing 150 gas jets; one 1,000 candle lamp in the office, displacing 100 gas jets; one 1,000 candle lamp in the kitchen, displacing 20 gas jets; one 1,000 candle lamp in bar room, displacing 25 gas jets; one 3,000 candle lamp in front of the hotel. The lamps in the dining room are switched from there to the front of the hotel, and to the bar room after the dinner hour, AND ALL ARE WORKING TO OUR ENTIRE SATISFACTION. We feel free to state that the BRUSH ELECTRIC LIGHT is a cheap, practical light to use where much light is needed. Yours truly. WM. SHARON.

We also light, with equal success, the Baldwin Hotel at San Francisco and the Grand Pacific Hotel at Chicago. For Hotel offices, corridors, dining rooms, etc., it is especially valuable and insures a great saving over gas.

——:o:——

From the "Continental," Philadelphia.

The Continental Hotel last evening introduced the Brush electric light in main hall, dining-room, office, and bar-room. Six burners are used, at a cost of one cent each per hour. In the dining-room, where one hundred and forty-four gas burners were used formerly, there are two electric burners, which give much more light than all the chandeliers. The power is obtained from the engine which runs elevator, and the saving to the hotel will be very great. The gas bill for one year has reached the sum of $21,000, which will be greatly reduced. The Continental is the first hotel in this city to use the electric light, and it is believed the example will be followed by others, as the Grand Pacific Hotel, Chicago, and Palace Hotel, San Francisco, have successfully used the Brush light for more than a year.—*Philadelphia Times*, June 6.

MENOMINEE MINING COMPANY,

Proprietors of the Vulcan, Cyclops, Norway, Quinnesec, Chapin & Florence Iron Mines, in the Menominee Range.

VULCAN, MICH., May 28, 1880.

MESSRS. TELEGRAPH SUPPLY CO.,

CLEVELAND, O.:

Gentlemen:—We have had one of your smaller six lights machines in constant use in our Quinnesec Mine since last year. It has proved so reliable, and has at all times given such a steady light that all our varied underground work has been greatly facilitated. In the labor of assorting rock from ore, we do as well underground as though working by daylight. With the eighteen light machine, which we are using in the open pits of the Norway mine, our work at night is always effective and very satisfactory.

Yours truly,

NELSON P. HULST, *Sup't.*

—:o:—

From the Deer Creek Mine, Near Smartsville, Cal.

SAN FRANCISCO, April 24, 1879.

Telegraph Supply Co., S. F.:—

GENTLEMEN—I have just returned from the Deer Creek Mine, near Smartsville, which is now lighted at night by three lanterns of 3 000 candle power each, supplied from a Brush Electric Machine furnished by you. The light thus produced enables the company to work the mine at night practically as well as by day. The machine requires but little attention and the expense is small. Should the apparatus continue to work as well as at present, the company will be entirely satisfied.

Yours truly.

GEO. P. THURSTON, Secretary.

The Lake Superior Mine at Ishpeming, and the Menominee Mine at Quinnesec, Mich,, are also using our light with excellent results.

—:o:—

HORSE-POWER REQUIRED.

RIVERSIDE WORSTED MILLS,
PROVIDENCE, R. I., Oct. 29, 1880.

Brush Electric Light Co., New York.

DEAR SIRS:

Yours of the 7th received, and in reply we would say that we had our engine indicated by an expert from the CORLISS ENGINE CO., on the 6th of Sept., 1880.

In his report he says: "During the experiment made to determine power required for the Electric Lights, there were running 81 lights; 4 machines connected to 16 lights each, and one machine to 17 lights, thus making 5 machines in operation. The power required to drive the lights and machines was 63.58 horse power."

Respectfully,

RIVERSIDE WORSTED MILLS,

By Herbert Wiswall.

THE LIGHTING OF MONUMENTAL PARK, CLEVELAND.

From Hon. R. R. Herrick, Mayor of Cleveland.

MAYOR'S OFFICE, CLEVELAND, O., June 27, 1879

A. T. Whiting, Esq., 35 *Devonshire St., Boston, Mass:*—

DEAR SIR.—Yours of the 4th instant is received. Our Monumental Park, formerly lighted by 105 gas lamps, is now, and has been since sometime in April, far better lighted by 12 Brush Electric Lights.

I think this Brush Electric Light is far superior to anything I ever saw before as an out-door park light. It is beautiful and makes everything around appear beautiful. I believe our people are universally pleased with the light. It is brilliant and steady. Our heavy storms of wind and rain do not seem to effect it in the least. The machine is located 500 feet from the park, and the circuit is about 4,000 feet in length, and all the lights are in one circuit. I think Nantasket Beach would be grandly beautiful if illuminated by these lights.

Respectfully,

R. R. HERRICK, Mayor.

—:o:—

Western Enterprise.

A TOWN LIGHTED BY THE BRUSH ELECTRIC LIGHT.

The city of Wabash, Indiana, makes the proud boast of being the first city in the world to adopt the electric light for street illumination, and its trial seems to have proved, in a double sense, a brilliant success. The common council of this place, a few weeks ago, entered into negotiations with the Brush Electric Light Company of Cleveland, Ohio, for one of their dynamo-electric generating machines of a guaranteed capacity of four lights of over 3000-candle power each. These four lamps are suspended from the ends of two cross-bars bolted about half-way up an iron flag-staff that rises from the dome of the court-house. The court-house itself stands on a rise of ground that, with the height of the dome, gives the light an elevation of about 200 feet above the city. The generating engine of eight-horse power is located in the cellar of the building. The contract was that the lights should illuminate a circle one mile in diameter, as light at the farthest point as it would be with a gas-lamp of usual street size every hundred feet. The trial showed this requirement to be more than fulfilled, as it was light enough at much more than that distance to tell the time on a watch, or read coarse print. Over ten thousand people witnessed the test.

Every alley and back-yard receives the light. A careful computation shows that to light the town equally as well by gas would require three lamps to every square, which would take over 500 for the same area.

These electric lamps consist simply of two carbon pencils about half an inch in diameter, arranged so that the current passes through all four and then returns to the machine. Each lamp has two sets of these carbons, so arranged that when one set burns out the other lights automatically.

The entire apparatus furnished by the Brush Electric Light Company—lamps, wires, and generating machines—cost $1,800. The engineer, and fuel, and entire expense of lighting the town is estimated at $750 per year, while sixty-five gas lamps, which would only make darkness visible in the same area, would cost $1,100 per year.—

Boston Daily Advertiser, May 8.

After the above test the City of Wabash purchased the entire outfit and is regularly using it for the lightiug of the town, greatly to the satisfaction and accommodation of the citizens. It is a complete practical success. The City of Galesburgh, Illinois, has since adopted the same system for its outdoor lighting.

List of Users of the Brush Light.

As the best evidence of the fact that the *Brush Electric Light* is no longer an experiment, but a fully developed and thoroughly practical illuminator, we give below a list of the more prominent places where the light has been purchased and is in regular use, or has been ordered for use. In none of these places was it adopted for its beauty and novelty only, but because it was the cheapest and best light obtainable and was entirely practical and simple.

In factories, mills, shops, depots, docks, parks, open spaces, warehouses, steamers, ferry boats, locomotives and in similar situations, it has no equal, and is being introduced as rapidly as our manufacturing facilities permit.

Rolling Mills, Iron and Steel Works, Machine Shops, etc.

32 Lights—Park, Bro. & Co., Black Diamond Steel Works, Pittsburgh, Pa.
36 " Brown, Bonnell & Co.'s mills, Youngstown, O.
23 " Pottstown Iron Co.'s mills, Pottstown, Pa.
4 " Edge Moor Iron Co., Edge Moor, Del.
12 " Phoenix Iron Co.'s mills, Phoenixville, Pa.
6 " Pennsylvania Steel Co.'s mills, Baldwin Sta., Pa.
16 " Otis Iron & Steel Co.'s mills, Cleveland, O.
2 " Nashua Iron Co.'s mills, Nashua, N. H.
18 " Norway Iron Co.'s mills, South Boston, Mass.
18 " Bay State Iron Co.'s mills, South Boston, Mass.
16 " Passaic Rolling Mill Co.'s mills, Paterson, N. J.
16 " N. J. Iron & Steel Co.'s mills, Trenton, N. J.
6 " Union Rolling Mill Co., Chicago, Ill.
6 " North Chicago Rolling Mill Co., Chicago, Ill
32 " W. C. Allison & Co.'s car works, Philadelphia, Pa.
16 " Washburn & Moen Manufacturing Co.'s wire mills, Worcester, Mass.
6 " Niles Tool Works, Hamilton, O.
4 " Union Iron Works, San Francisco, Cal.
4 " M. C. Bullock, Diamond Drills, Chicago, Ill.
16 " Standard Nut Co., Pittsburgh, Pa.
6 " Pittsburgh Hinge Co., Pittsburgh, Pa.
2 " Falls Rivet Co., Cuyahoga Falls, O.
32 " Albany & Rens'r. Iron & Steel Co., Troy, N. Y.
16 " Moorhead, McClean & Co., Pittsburgh, Pa.
7 " Akron Iron Co., Akron, O.
16 " Aultman, Miller & Co., Agricultural Works, Akron, O.
18 " South Boston Iron Co., Boston, Mass.
16 " J. A. Roebling's Sons' mills, Trenton, N. J.
16 " Wm. Sellers & Co.'s works, Philadelphia, Pa.
18 " Jackson & Sharp Co , Wilmington, Del.
32 " Reading Iron Works, Reading, Pa.
6 " Griffin Car Wheel Co., Detroit, Mich.
80 " Edgar Thompson Steel Co., Pittsburgh, Pa.
16 " Harrison Wire Co., St. Louis, Mo.
32 " John Brown's Sons, Philadelphia, Pa.
16 " Joshua Rhodes & Co., Allegheny, Pa.
16 " Deere & Co., Plow Works, Moline, Ills.
18 " Blain Bros., Huntingdon, Pa.
16 " Sweets Manufacturing Co., Syracuse, N. Y.
16 " D. M. Osborne & Co., Auburn, N. Y.

Woolen, Cotton, Linen and Silk Factories.

126 Lights—Thomas Dolan & Co.'s woolen mills, Philadelphia, Pa.
116 " Riverside Worsted Mills, Providence, R. I.
108 " Oswego Falls Woolen Mills, Fulton, N. Y.
116 " Atlantic Mills, dress goods, Providence, R. I.
54 " Amoskeag Manufacturing Co., cotton goods, Manchester, N. H.
65 " Willimantic Linen Co., spool cotton Willimantic, Conn.
54 " Eagle and Phœnix Mills, Columbus, Ga.
32 " Mississippi Mills, Wesson, Mississippi.
20 " Globe Mills, dress goods, Woonsocket, R. I.
36 " Conant Thread Co., spool cotton, Pawtucket, R. I.
18 " Moss Manufacturing Co., Westerley, R. I.
6 " Waterman & Meyer, corset factory, W. Brookfield, Mass.
18 " Cheney Bros., silk works, South Manchester, Conn.
18 " Raritan Woolen Mills, Raritan, N. J.
19 " Cohannet Mills, Taunton, Mass.
6 " Cohoes Warp Thread Co., Cohoes, N. Y.
72 " Whittenton M'f'g Co., Taunton, Mass.
72 " Wanskuck Co., Providence, R. I.
58 " Burlington Woolen Mills, Winooski Falls, Vt.
18 " Renfrew Manufacturing Co., North Adams, Mass.

Large Stores.

64 Lights—John Wanamaker, Grand Depot, Philadelphia, Pa.
20 " Dunham, Buckley & Co., dry goods, 340 Broadway, N. Y.
36 " Bates, Reed & Cooley, dry goods, 343 Broadway, N. Y.
6 " A. D. Juilliard & Co., dry goods, 68 Worth street, N. Y.
6 " Loeser & Co., dry goods, Brooklyn, N. Y.
6 " Continental Clothing House, Washington street, Boston, Mass.
40 " S. C. Davis & Co., dry goods. St. Louis, Mo.
16 " Willoughby, Hill & Co., clothing store, Chicago, Ill.
6 " Jevnes Tea Store, Chicago, Ill.
6 " A. J. Nutting & Co., clothiers, Brooklyn, N. Y.
6 " John Paret & Co, " " "
16 " H. K. & F. B. Thurber & Co., New York City.
16 " Wm. Whitney & Co., dry goods, Albany, N. Y.
7 " E. M. McGillen & Co., dry goods, Youngstown, O.
16 " " " " " Cleveland, O.

Parks, Docks, Summer Resorts, etc., for Outdoor Use.

17 Lights—Prospect Park, American Falls, Niagara Falls, N. Y.
17 " Chautauqua S. S. Assembly, Fairpoint, N. Y.
16 " Monumental Park and Superior street, Cleveland, O.
16 " Nantasket Beach, Boston Harbor, Boston, Mass.
18 " N. O. City Ry. Co., gardens, New Orleans, La.
18 " Schwartz Bros., gardens, New Orleans, La.
18 " Brighton Beach Hotel, seaside resort, Coney Island, N. Y.
17 " Harbor of Montreal and docks, Montreal, Canada.
16 " Atlantic Garden, Bowery, N. Y. City.
18 " Sea Beach Palace Hotel, Coney Island, N. Y.
4 " Henry Wenzer, New Orleans, La.

Circuses.

13 Lights—Cooper, Bailey & Co., London Circus, "On the road."
9 " W. W. Coles' circus, "On the road."
4 " John Robinson's circus, "On the road."
2 " W. C. Coup's circus, "On the road."

Colleges, Churches, etc.

2 Lights—Franklin Institute, Philadelphia, Pa.
2 " Ohio Medical College, Cincinnati, O.
1 " Wabash College, Crawfordsville, Ind.
2 " Baptist Church, North Orange, N. J.

Hotels.

10 Lights—Palace Hotel, San Francisco, Cal.
10 " Baldwin Hotel, San Francisco, Cal.
18 " Grand Pacific Hotel, Chicago. Ill.
16 " Continental Hotel, Philadelphia, Pa.

Railroad Companies.

18 Lights—C. & N. W. Ry. Co., Ore Docks, Escanaba, Mich.
16 " Manhattan Co. Elevated Roads, N. Y. City.
36 " Penna. R. R. Depot, Jersey City, N. J.
16 " " " Shops, Altoona, Pa,
18 " Mich. Cen R. R. Co., Detroit, Mich.
72 " Boston & Albany R R. Co. Boston Mass.
6 " Grand Trunk R. R., Montreal, Canada.

Mines, Smelting Works, etc.

6 Lights—Menominee Mining Co., Quinnesec Mine, Quinnesec, Mich.
18 " Menominee Mining Co., Norway Mine, Vulcan, Mich.
18 " Cleveland Iron Mining Co., Cleveland Mine, Ishpeming, Mich.
4 " Deer Creek Mine, near Smartsville, Cal.
16 " Pilot Knob Iron Co., iron mine, Pilot Knob, Mo.
2 " Great Basin Mining and Smelting Co., Salt Lake City, Utah.
2 " Jordan Mining Co., Salt Lake City, Utah.
4 " North Bloomfield Mining Co., Nevada City, Nevada.
14 " Alice Gold & Silver Mining Co., Walkerville, Montana.
12 " Calumet & Hecla Mining Co., Calumet, Mich.
3 " Bassick Silver Mining Co., Rosita, Colorado.
4 " Horn Silver Mining Co., Frisco, Utah.
6 " Billings & Eilers, Smelters, Leadville, Col.
7 " Grant Smelting Works, " "

Steamers.

6 Lights—Steamer Massachusetts, Providence Line, N. Y. City.
3 " " R. R. Springer, Mississippi River, Cincinnati, O.
6 " " State of California, Pacific Coast Line, San Francisco, Cal
2 " " R. C. Grey, Grey's Iron Line, Pittsburgh, Pa.
2 " " Iron Dale " " " " "
6 " " Anchor Line Steamers, St. Louis, Mo.
6 " " S. H. Parisot, New Orleans.
2 " " Natchez, Captain Leathers, New Orleans, La.
3 " " J. K. White, New Orleans, La.
1 " " Harry Brown, Pittsburgh, Pa.

Factories and Establishments of Various Kinds.

20 Lights—Barber Match Co., match factory, Akron, O.
16 " Allen Bro., paper mill, Sandy Hill, N. Y.
2 " Montague Paper Co., paper mill, Turner's Falls, Mass.
19 " Stanley Rule and Level Co., N. Britain, Conn.
6 " Plume & Atwood Manufacturing Co., Thomaston, Conn.
4 " Atlantic Petroleum Refining Co., Point Breeze, Philadelphia.
1 " Hartford Steam Boiler Inspection Co., Philadelphia.
4 " American Linoleum Co., Staten Island.

32 Lights—Chicago Times Building, Chicago, Ill.
1 " Chicago & Alton Railroad bridge, Glasgow, Mo.
40 " Crystal Plate Glass Co., Crystal City, St. Louis, Mo.
16 " J. G. Kitchen, Philadelphia,
18 " Ferry Seed Co., Detroit, Mich.
3 " Olds & Lord, saw mill, Afton, Minn.
6 " Bergner & Engle Brewing Co., Philadelphia.
12 " Planters Oil Co., New Orleans, La.
3 " Pack, Woods & Co. Lumber Mill Oscoda, Mich.
18 " Studebaker Bros. Manufacturing Co., South Bend, Ind.
16 " Cincinnati Cooperage Co., Cincinnati, O.
16 " Fleischman & Co., Cincinnati, O.
16 " Strobridge Lithograph Co., Cincinnati, O.
16 " G. Y. Smith & Co , Kansas City, Mo.
1 " Spencer Borden, Fall River, Mass.
16 " Dickson Manufacturing Co., Scranton, Pa.
16 " Walter Aiken, Franklin Falls, N. H.

Rented Lights Furnished from a Central Station.

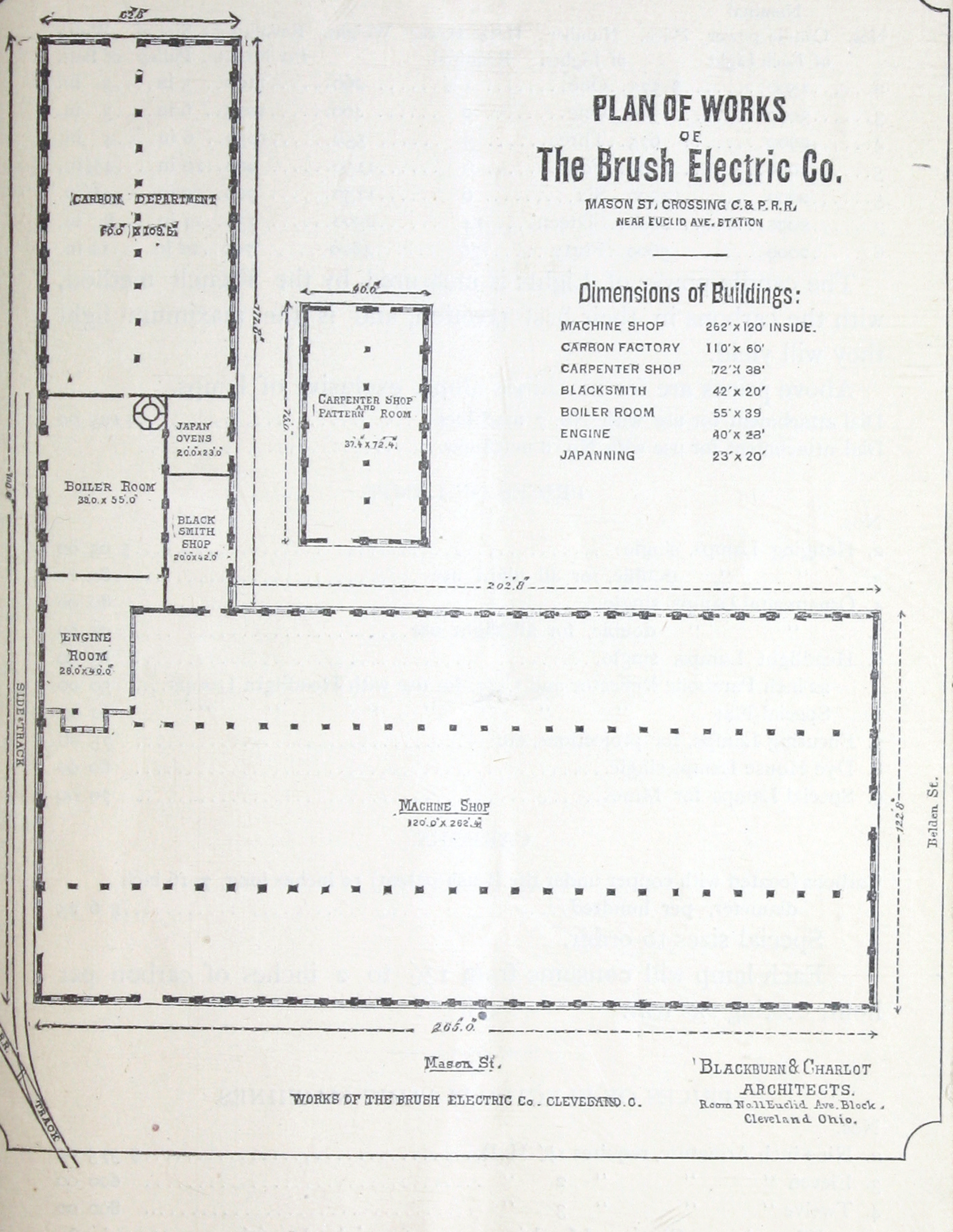
71 Lights—California Electric Light Co., San Francisco, Cal.
36 " Grand Rapids Electric Light and Power Co., Grand Rapids, Mich.
32 " Detroit Electric Light Co., Detroit, Mich.
296 " Brush Electric Light Co. Lighting Station, New York City.
4 " City of Wabash, on Court House dome, Wabash, Ind.
4 " City of Galesburgh, Ill., flag staff, Galesburgh, Ill.
8 " " " Akron, O., City Lighting.
105 " Salt Lake City, Utah, Lighting Station.
4 " Ogden, Utah City Lighting
48 " Lighting Station, Cleveland, O.

Foreign Users of Brush Light.

700 Lights sold for British Royal Navy, London, England, and to various other parties by Anglo American Electric Light Co., London, England.

Among which we mention the following:

The Admiralty, for Royal Navy.
South Kensington Museum.
Royal School of Mines, Jermyn-street.
Woolwich Arsenal.
Peek, Frean & Co., London.
Barrow-in-Furness Ship Building Company.
Great Eastern Railway Company.
Denny Bros., Dumbarton (for ships).
Messrs. Bass & Co., Burton-on-Trent.
Isaac Holden, Esq., Oakworth House, Oakworth.
Bullock & Co. (for export).
Messrs. Holden & Son, Alston Works, Bradford.
L. S. Crossley, Esq., Halifax (on order).
Messrs. Caird & Co., Greenock.
R. Napier & Sons, Glasgow (on order).
Baldwin, Halifax (on order).
Great Western Railway Company, Paddington Station (on order).
South Eastern Railway (Charing Cross Station).
Clock Tower, Houses of Parliament, Westminster,
The Roanhead Hæmatite Mines, Ulverston.
The Clyde Spinning Company, Glasgow.
Corporation of the City of London, for lighting of Blackfriars Bridge, New Bridge-street, Ludgate Circus, Ludgate Hill, St. Paul's Churchyard (North Side), and in Cheapside (to King Street).



PLAN OF WORKS
OF
The Brush Electric Co.

MASON ST. CROSSING C. & P. R. R.
NEAR EUCLID AVE. STATION

Dimensions of Buildings:

MACHINE SHOP	262' x 120' INSIDE.
CARBON FACTORY	110' x 60'
CARPENTER SHOP	72' X 38'
BLACKSMITH	42' x 20'
BOILER ROOM	55' x 39
ENGINE	40' x 28'
JAPANNING	23' x 20'

WORKS OF THE BRUSH ELECTRIC Co. CLEVELAND. O.

BLACKBURN & CHARLOT
ARCHITECTS.
Room No 11 Euclid Ave. Block,
Cleveland Ohio.

PRICE LIST.

PRICES OF LIGHT MACHINES.

Nos.	Nominal Candle power of Each Light	Price.	Number of Lights.	Horse Power Required.	Weight.	Revolutions Per Minute.	Size of Pulley	Width of Belt.
2	1500	$ 375	One	1½	260	1100	5 in.	3 in.
3	3000	500	One	2	400	1075	6 in.	3 in.
4	2000	675	Three	3	550	1050	6 in.	4 in.
5	3000	1200	Four	6	1150	900	10 in.	4½ in.
5	2000	1200	Six	6	1150	900	10 in.	4½ in.
7	2000	2000	Sixteen	14	2500	750	14 in.	8 in.
8	2000	3600	Forty	36	4800	700	20 in.	12 in.

The candle power of Lights is measured by the French method, with the carbons in their best position, and is the maximum light they will yield.

Above prices are for machines alone, exclusive of lamps.

Dial attachment for use with No. 7 machines ..... $ 125 00
Dial attachment for use with No. 8 machines .....

PRICES OF LAMPS.

Nos.		
2.	Hanging Lamps, single	$ 65 00
3.	" " double, for all night use	80 00
4.	Ornamental Lamps, single	80 00
5.	" " double, for all night use	95 00
6.	Headlight Lamps, single	85 00
	22 inch Parabolic Reflector and Case, for use with Headlight Lamps	50 00
	Special Flat " " " " " " "	60 00
7.	Focusing Lamps, for projections, etc	75 00
8.	Dye House Lamps, single	80 00
9.	Special Lamps for Mines	70 00

CARBONS.

Carbons (coated with copper under the Brush patent) 12 inches long, 7–16 inch diameter, per hundred ..... $ 6 25

Special sizes to order.

Each lamp will consume from 1½ to 2 inches of carbon per hour, costing *one cent.*

PRICES OF ELECTRO-PLATING MACHINES.

Nos.		
2.	Nine inch Armature, requires 1½ H. P	$ 375 00
3.	Eleven " " " 2 "	600 00
4.	Twelve " " " 3 "	800 00

The above Plating Machines are furnished with counter-shaft, cone pulleys and a resistance-switch, without extra charge.

ALL PRICES GIVEN ABOVE ARE NET. CASH IN THIRTY DAYS.

[BLANK PAGE]

API INTERNATIONAL

CCA